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Abstract

Teachers and students nationwide are struggling to address the disparity in academic achievement between students in urban, socioeconomically underprivileged and racially segregated school districts, and their more affluent, white, suburban counterparts. Poorer urban schools are also less likely to have adequate funding and support for arts programs. Educators must thus look outside of traditional learning models and explore all opportunities to engage their students and create learning opportunities. Arts integration has been shown to improve student attitudes and engagement, along with a potential to "transfer" skills and knowledge to other subject areas. This study sought to examine whether the integration of art in project-based learning could improve student learning outcomes for fifth graders in an urban elementary school. The study examined three separate classes of fifth grade students who attend a Title 1 school in Hartford, CT. All of the students participated in the same curriculum study of the Universal Declaration of Human Rights in their English Language Arts Expeditionary Learning unit. The three classes each received a different level of integrated arts learning in their visual arts classes, ranging from none (control), to moderate, to intense. Student learning outcomes were measured by comparing students' scores on the English Language Arts Expeditionary Learning Unit Assessment test at the end of each module. As students' level of arts integration increased, their unit assessment scores also increased, confirming the hypothesis of the study.

Improving student achievement in core subject areas is priority for American educators. According to the National Education Association (2015), after decades of progress in narrowing achievement gaps, disparities in educational outcomes related to poverty, English language proficiency, disability, and racial and ethnic background still persist. In recent years, closing these gaps was a focal point for education policy (National Education Association, 2015). Reardon (2011) analyzed 19 nationally representative studies conducted between 1941 and 2001 that examine the relationship between the achievement gap and students' socioeconomic status. A significant finding of his research was that the achievement gap between students living in poverty, and those not, grew by 40% between the 1970s and 2001 (Reardon, 2011). In standard deviation units adjusted for the reliability of each test, Reardon found that achievement gaps in reading increased from approximately 0.6 in 1940 to approximately 1.25 in 2001. For math scores, the gap grew from approximately 0.78 to approximately 1.30 standard deviation units. Reardon explains that these differences in standard deviation points indicate gaps in achievement that are as high as three to six years of learning (Reardon, 2011). Further data shows that 28% of students who qualify for national free lunch programs are performing at "below basic" levels, as compared to only 7% of those not eligible for free lunch (National Education Association, 2015). This achievement gap has been the impetus of much educational change and legislation, including the No Child Left Behind Act of 2001 (NCLB).

The importance of closing the achievement gap goes far beyond the moral obligation of equality. There is a significant impact on our nation's economy. Data shows that students from low socioeconomic backgrounds suffer from higher high-school dropout rates, poor college or technical-career training program readiness, and lower college completion rates and employment as adults (National Education Association, 2015). Additionally, research by McKinsey & Company (2009) demonstrates a link between the education achievements gaps and the struggling U.S. economy. According to their studies, these gaps represent as much as $2.3 trillion in lost output (Auguste, Hancock, and Laboissiere, 2009). Specifically looking at the gap that exists between low-income students and their peers, Auguste, Hancock and Laboissiere (2009) estimate that the cost of lost U.S. Gross Domestic Product was $670 billion between 1998 and 2008. These findings underscore the need to support students that exist in these gaps not just for their own benefit, but for the strength of the nation.

Although NCLB identifies core subjects as math, reading and science, it also asserts that the arts are a part of this core of critically important subjects (Ruppert, 2006). According to Ruppert, 93% of Americans

identify arts education as significantly important for improving school experiences and for enriching our national culture. Studies by a number of researchers, including Sousa (2006), Catterall (2002), and Harvard Graduate School's Project Zero (2006), indicate that there are positive connections between arts learning and student achievement in other core subjects (Winner, E., et al., 2006). For example, Simpson (2007) cites the importance of making connections for students: when facts such as a visual image, such as a painting or ceramic vessel, and a date or location are linked together, both the left and right sides of the brain are engaged and learning is enhanced (Simpson, 2007). Bolak, Bialach, & Dunphy (2005) say that a number of brain researchers note the significance of artistic learning and practice in developing and strengthening pathways in the brain. Jensen (1998) asserts that biology research indicates that a strong foundation in arts learning can develop areas of the brain that support creativity, concentration, problem-solving, coordination and self-discipline. Neurobiological research by Sylwester (1998) highlights how critical pathways in the brain are developed through experiences in the arts. He notes that emotion, which is accessed through the arts, is further linked to attention, which is a crucial ingredient for academic learning. He posits that most schools neglect the importance of activating emotions, even though it is our emotions that drive our attention. Arts learning engages the unconscious emotional learning centers of the brain and should not be overlooked as this part of the brain can support problem-solving and academic learning (Sylwester, 1998).

Despite these connections, many schools are providing less arts education opportunities and exposure to arts in their communities for their students (Chappell, 2013). Faced with pressure to close the achievement gap in reading and math, along with increased importance placed on standardized test results, many schools have taken time away from "extras," like the arts, and put it into reading, math, and test preparations (Chappell, 2013). According to Brouillette, Childress-Evans, Hinga, & Farkas (2014), many of the schools that are faced with failing scores and low student achievement are located in poor, urban areas, and are the ones most likely to be faced with dwindling resources forcing a choice between the arts and more "traditional" academic subjects. The elimination of arts programs to redirect funding into standardized test preparation is common in these same poor, urban schools (Brouillette, et al., 2014). Indeed, Burton, Horowitz, and Abeles (2000) found that as poverty increased for a school, the arts programs within those schools decreased. Chappell (2013) reports that in some states, as many as 89% of schools were failing to provide arts courses that were of quality for the students, and that arts classroom facilities, equipment, and student materials were inadequate due to a lack of funding. In a 2011, the National Endowment for the Arts reported that school-aged students' participation in the arts had steadily declined from 64.6% in 1982 to 49.5% in 2008, nationwide, regardless of socioeconomic status. This decrease was most significant for African American and Hispanic children. In 1982, 50.9% of African American children received arts education; by 2008, that number had decreased to 26.2%. Hispanic students experienced a comparable decrease, with participation in arts education dropping from 47.2% in 1982 to 28.1% in 2008 (National Endowment for the Arts, 2011). Students in minority and low socioeconomic school settings have even less access to arts education than their affluent peers, creating an "opportunity gap" for disadvantaged students (Chappell, 2013).

Schools and educators need to find ways to address the issue of student achievement in ways that harness the potential of the arts. Students in socioeconomically disadvantaged schools need strong supports to engage them in their learning, and to work toward increasing their achievement in both reading and math skills. Evidence suggests that a strong arts program can help these students to increase achievement in non-arts curriculum areas, including reading. The following discussion will show the correlation between students' participation in arts learning and their standardized test scores, followed by an examination of increased student engagement through arts education, potential other positive outcomes, and the notion of transfer. Last, a proposed intervention is discussed in which a carefully crafted art integration is used to support and enhance student learning in an English Language Arts unit. It is hypothesized that by aligning the content of the art class with the content of the English Language Arts unit, student achievement will improve.

Correlation of Arts Learning and Test Scores

Several researchers have identified links between students who study arts and achievement as measured by standardized test scores. Vaughn and Winner (2000) studied twelve years' worth of high school students' SAT Reasoning Test scores. They found that with each art course taken, students' SAT scores showed an increase. This increase was as much as 58 points for students with four or more arts courses (Vaughn & Winner, 2000).

Catterall (1998) noted that although students from low socioeconomic backgrounds are nearly twice as likely to have a low involvement with arts education, evidence indicates that the benefits of arts education are even greater for these students. Students who participated in two or more arts classes performed an average of 15% higher on standardized tests (Catterall, 1998). Though these correlations clearly exist, researchers are not clear as to why. Do these students perform better for some other reason? Some researchers wonder if this says more about the motivation and engagement of these students than about the arts learning that they receive (Eisner, 2010.)

Increased Student Engagement

In schools with a disproportionate number of students who are economically, linguistically, or culturally disenfranchised, student engagement is a serious issue. The National Education Association notes that these students are significantly more likely to drop out of school than their suburban counterparts. In 2012-2013, graduation rates for low-income students were 8.1% lower than the national average (National Education Association, 2015). Jensen (2009) notes that children in poverty are often dealing with chronic and acute stressors. As a result, these children can struggle with inappropriate emotional and behavioral responses, impulsivity, high levels of frustration, and reduced motivation and determination (Jensen, 2009). Numerous studies have shown that strong arts programs can play an important role in students' improved attendance and ultimate decisions to remain in school (Burton, et al, 2000, Eisner, 1998, Ruppert, 2006, Winner, E., et al., 2006). When struggling schools eliminate arts programming in favor of traditional test-prep, they may be doing their students a serious disservice. When students are engaged, they are better motivated and when they are better motivated, they achieve higher levels of academic success. Arts integration can play a significant and positive role in this.

A 2003 study of high school students showed that students' reported having higher rates of engagement during art class than in eight other classes: math, English, science, foreign languages, history, social studies, computer studies, vocational education (Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003). In a follow-up study, conducted ten years later, Brouillette et al. (2014) examined the potential for the arts to positively impact student engagement and improve attendance of English Language Learners at high-poverty schools in an urban school district. After the district implemented a city-wide arts integration program, which involved bringing teaching artists in to work alongside classroom teachers to teach lessons in visual arts, theater and dance, researchers found that attendance increased by as much as 10% on days when students knew they had an arts class. Teachers who were interviewed as part of the research stated that their students showed higher levels of engagement, better behavior, and were motivated to be in school so that they could attend the art classes (Brouillette et al., 2014).

As previously noted, the National Education Association reported that graduation rates for students from low socioeconomic backgrounds is 8.1% lower than other students (National Education Association, 2015). However, Catterall's study of 25,000 eighth and tenth grade students found that arts education had a strong impact on at-risk students in terms of a renewed enthusiasm and engagement with school. He found that the dropout rate for students from low socioeconomic backgrounds was 45% lower for students who participated in two or more arts classes (Catterall, 1998).

Additional Positive Outcomes of Art Education

Beyond test scores, learning in the arts has been shown to have a number of other positive outcomes for students. Gullatt (2007) notes that the skills that students learn through arts courses are often those that are identified as positive skills and attributes for success in academic learning. These skills include creativity, risk-taking, critical thinking, persistence and cooperation (Gullatt, 2007). A study by Catterall (1998) surveyed low socioeconomic status students in tenth grade who participated in varying levels of arts classes or activities. His analysis found that students who had a higher involvement in the arts were 20.4% more likely to perform in the top 2 quartiles of standardized testing than students with lower arts involvement. Further, they were 20% more likely to perform community service, and 23% more likely to watch less than one hour on television each day (Catterall, 1998).

Burton, Horowitz, and Abeles (2000) conducted a study of over 2,400 elementary and middle school students. They were looking to see if they could determine if cognitive skills developed through the arts could have an effect on other subject areas. Data collected through interviews and questionnaires given to the teachers of the students involved in the study found that a number of important skills were gained including creative thinking, fluency in thought, originality, focused perception, imagination, risk-taking, task-persistence and ownership in learning. They reported that these higher-order skills are necessary for achievement in subjects such as reading and mathematics (Burton, Horowitz, and Abeles, 2000).

Winner and Harvard Graduate School's Project Zero (2000) conducted an analysis of over 200 studies that sought a relationship between arts and non-arts outcomes. Though their study found some causal relationships between drama, music, verbal skills and spatial reasoning, their most significant findings were on the kinds of thinking skills that are developed through arts learning. Researchers videotaped arts classes, interviewed the teachers involved, and then coded the data for specific kinds of "thinking dispositions" that teachers were attempting to instill. The report identified eight specific thinking skills that are learned in visual arts classes, and have benefits to students outside of the arts. They call these the studio habits of mind: develop craft, engage and persist, envision, express, observe, reflect, stretch and explore, and understand art world. They assert that by identifying these specific "studio habits of mind," further research can explore exactly how these skills can affect the transfer of learning to non-arts subject matter (Winner, E., et al., 2006).

Transfer

In addition to the issue of engagement and motivation, many researchers have undertaken studies of the issue of transfer. Transfer, in this instance, refers to the theory that cognitive skills and learning in one context (e.g., the arts) can result in cognitive skills and learning in a separate, unrelated subject (Burton, Horowitz & Abeles, 2000). This idea is troubling to some in the art education world. These educators are concerned that the premise that art education has value only insomuch as it can support "more important" subject matter is a one that could ultimately hurt the future of art education in our schools (Eisner, 1998).

In his review of ten years' worth of studies claiming evidence of transfer, Eisner (1998) found some limited correlation to student academic achievement, but he asserts that the positive increase in student learning outcomes is more likely a result of increased engagement and positive attitudes. He notes that there are many studies making claims about transfer, but that they are unable to show sufficient causal evidence. Eisner asserts that future studies to search for evidence of transfer must be carefully designed to identify exactly what is transferred and how (Eisner, 1998).

In a study by Teachers College, Columbia University, researchers Burton, et al, (2000) looked specifically for a link between skills gained in arts and learning in other academic areas. These researchers collected data from 12 schools, including over 2,400 students. While they did find evidence of positive

outcomes ranging from increased positive attitudes about school from both students and teachers, to better test scores, researchers were not able to identify a specific link to the notion of transfer. The proposed study by this author will look for a connection indicating transfer of knowledge from art class to an English Language Arts unit for fifth grade students.

In an experiment by Bowen, Greene, and Kisida (2014), students were divided into two randomly selected groups. The experimental group had the opportunity to visit an art museum. Studentsin the experimental group received a short pre-visit introduction, visited the museum, and received a guided tour. Students in the control group did not visit the museum. Two weeks later, students in both groups were shown an art image they had not previously seen. Participants were asked to write a five-minute response essay, which researchers coded and scored using Luke et al.'s critical-thinking skills checklist (Bowen, Greene, and Kisida, 2014). In comparing the scores of the experimental group that visited the museum and the control, they found a relationship between this arts experience and critical thinking skills. Students in the experimental group scored between 11% and 33% higher on the essay assessments than their control counterparts, suggesting significant positive benefits from even a very modest arts experience (Bowen, Greene, and Kisida, 2014). This finding suggests that there was potential transfer, as students who had the deeper art experience had much higher achievement on measures of critical thinking skills. Students benefitted from the visit to the art museum.

Art Integration

Art integration is a broad term used to describe the potential relationship between student learning in a separate arts classroom and those same students' learning in an un-related subject area. In this study, the term art integration refers to a specific and coordinated effort by the art teacher to support fifth grade students learning in their English Language Arts unit, taught by their general education fifth grade teachers. Art integration can be a method to differentiate instruction. Learners have unique strengths and needs; research shows that the arts can be strong tools to motivate students who may struggle with more traditional methods of learning.

Purpose Statement

There is much research that shows a general, positive link between arts education and student academic learning and student success (Catterall, 1998, Eisner, 1998, Gullatt, 2007, Winner, et al., 2006). Research has indicated a serious gap in achievement between low and high socioeconomic students, as well as between students of color and Caucasian students (National Education Association, 2015). Further research shows that the arts can be an effective tool to improve academic achievement of low socioeconomic students, African American students, and Hispanic students (Catterall, 1998). This study will look specifically at using art integration to create a positive increase in achievement for economically disadvantaged students, primarily of Hispanic and African American heritage.

This study sought to determine whether a precise and focused art integration program would yield an increase in student learning outcomes in a specific topic area for fifth graders in an urban elementary school. By providing an arts integration lesson, specifically designed to support an academic unit, this study examined whether students would demonstrate improvement in learning outcomes as measured by their academic unit assessment.

Methods

Participants

The participants for this study included 52 fifth grade students at an elementary school in Hartford, CT, a city of approximately 125,000 residents. The school serves approximately 675 students enrolled in Pre-Kindergarten through 8th grade. During the 2015-2016 school year, 100% of the students participated in federal free or reduced lunch and breakfast programs. The student population was comprised of approximately 73.5% Hispanic or Latino, 13.4% Black or African American, 5.8% Asian and 5.6% Caucasian students. In addition, 37.5% of students were English Language Learners (ELLs), and 20.8% received special education services.

These student participants were randomly divided between three homeroom classes: the control group, experimental group 1 and experimental group 2. Students in these classes ranged in age between 10 and 12 years old and were approximately 50% male and 50% female. Within each class, approximately 30% of students received English Language Services, and approximately 17% of students received special education services due to learning disabilities in the areas of reading and math. The control group and experimental group 1 attended art class for 45 minutes weekly. Experimental group 2 attended art class twice weekly, for a total of 90 minutes. These participants did not receive any incentives for participation. These classes were selected because the class demographics are similar, and this team of teachers work closely together, ensuring a high-level of commonality in instruction.

The participants studied a specific curriculum with their regular education, fifth grade homeroom teachers. All three of the teachers were female. Their average age was 43 and their average years of teaching experience was 20. The teachers were all CT certified elementary teachers who were trained in the Expeditionary Learning curriculum that the student participants studied. The classroom teachers followed the curriculum, administered, and scored the assessments. Participants attended art class with the researcher on a regular, weekly schedule.

Materials and Apparatus

Apparatus. Student participants were provided with reference materials containing visual symbols related to human rights as well as images of art by Peter Max, Shepard Fairey and Banksy. Students created posters using 12”x18” or 18”x24” inch paper, crayons, colored pencils and markers. The researcher used an Apple MacBook Air, equipped with OS X El Capitan, to record the participants’ scores on a Microsoft Excel spreadsheet.

Curriculum. All of the participants followed the Expeditionary Learning (EL) curriculum “GRADE 5: MODULE 1: Becoming a Close Reader and Writing to Learn: Stories of Human Rights.” This curriculum was a twelve-week English Language Arts module with three units. The first unit used informational texts to build background knowledge about the *Universal Declaration of Human Rights*, created by the United Nations. In the second unit, students applied their new learning about human rights through a case study of how a fictional character responds to human rights challenges. Students read the novel *Esperanza Rising*, as well as informational texts related to the story’s historical context. The third unit of this module asked students to take their knowledge of human rights and the story of *Esperanza Rising* and create a Readers Theater performance.

Measures. The EL Module included six scheduled pre- and post-test assessments. The assessments asked students to read a text and then complete three to four short-answer, text-dependent questions, as well as approximately four multiple-choice questions, each worth one point. An example of a multiple choice question is: “Read the following sentences. Then circle the answer that is the best match for the word in bold.

1. Each person should be treated with **dignity**. A. pride B. respect C. kindness D. friendship." Students are also asked to write short essay responses as well. For example, "Answer the following question. Use complete sentences and at least three words from the word bank: "What are human rights?" Short answer and essay questions were scored either 2 (The answer is factually accurate. The answer includes at least three words from the word bank, all used correctly.), 1 (The answer is factually accurate. The answer includes at least two words from the word bank, both used correctly.), or 0 (no response or totally inaccurate), based on the Sample Responses for Teacher Reference pages that accompany each assessment. Total possible points vary for each assessment. Assessments were administered by the fifth grade classroom teachers.

Procedure

This study took place over twelve-weeks in the fall of 2016. It was a quasi-experiment, as the participants were already assigned to one of three homeroom classes. Each classroom was heterogeneously grouped, with approximately equal numbers of male and female students, varying levels of general education, special education, and English Language Learner students. All of the student participants in each of the three groups followed the EL curriculum Stories of Human Rights with their classroom teacher. The experimental treatment was the participants' instruction when they attend art class. The independent variable for the experiment was the integration of art instruction that was aligned with the EL Stories of Human Rights module.

There were three groups in this experiment; the specific experimental treatments were as follows. The control group received no treatment. Experimental group 1 received a moderate treatment. That is, they received integrated art instruction that was specifically aligned with the EL module. "Integrated art instruction" meant that the instruction that students received while in art class reflected and supported the subject matter (in this case human rights) that was being studied in the regular education classroom. Experimental group 2 received a more intense treatment, consisting of twice as much art integration aligned with the EL module as experimental group 1. The dependent variable was the participants' scores on the EL Module assessments.

Throughout the EL Module, there were three units, each with a pre- and post-test, for a total of six assessments. All of the participants in each of the three groups received the same assessments, which were administered and scored by the classroom teacher. These scores were collected by the researcher and recorded.

Control Group. Participants in the control group studied the EL curriculum with their fifth grade classroom teacher. They attended art class once weekly for 45 minutes. During their art lesson, which was completely unrelated to the EL module, they were directed to study vocabulary words related to the novel *Wonder*, by R.J. Palacio. The students in the control group were purposely directed away from any subject matter that could be related to human rights, ensuring for validity in the study. These students were guided through a lesson in creating a poster related to their selected vocabulary word using markers, crayons and colored pencils on 12"x18" paper.

Experimental Group 1. In experimental group 1, participants studied the EL curriculum with their fifth grade classroom teacher, and received a moderate level of art integration. They attended art class once weekly, for 45 minutes. During their time in art class, they received art education specifically aligned with the EL Stories of Human Rights module. Participants were directed to use what they learned in their EL curriculum about the Universal Declaration of Human Rights to create a poster. Student participants were provided with a printed reference packet containing visual symbols related to human rights as well as images of art by Peter Max, Shepard Fairey and Banksy. Participants used markers, crayons and colored pencils to create their posters on 12"x18" paper. Participants first participated in whole-group discussion in the art class to determine a list of potential vocabulary words and phrases to use as subjects. Then participants created sketches of their poster design using the reference packet and their own ideas. During subsequent art classes, each class period began with a 5-minute whole group review of the EL Unit. Participants spent 35 minutes working on their posters and

5 minutes cleaning up. When the posters were complete, participants spent one 45-minute class conducting a gallery-style critique of the class's works of art. Participants viewed and evaluated their own and each other's posters and discussed how their art relates to the EL Module of study that they worked on in their classroom.

Experimental Group 2. Participants in experimental group 2 followed a similar pattern as experimental group 1, but they received a more intense degree of art integration. Participants studied the EL curriculum with their fifth grade classroom teacher. They attended art class twice weekly for a total of 90 minutes. During their time in art class, they were directed to use what they learned in their EL curriculum about human rights to create a large poster using markers, crayons and colored pencils. Participants first participated in whole-group discussion in the art class to determine a list of potential vocabulary words and phrases to use as subjects. Student participants were provided with a printed reference packet containing visual symbols related to human rights as well as images of art by Peter Max, Shepard Fairey and Banksy. Next, participants created a detailed sketch planning their poster, identifying and the words or phrases that they planned to illustrate and the symbolic imagery they planned to use. Students wrote a short paragraph explaining their choices. In the subsequent art classes, participants began art classes with a 5-minute review plus an additional 5 minutes of direct instruction, re-teaching key components of the EL unit such as vocabulary. Participants were instructed to incorporate specific knowledge of the unit into their posters. They had 30 minutes to work on their posters and 5 minutes to clean up, repeated twice during the week, for a total of 20 minutes of whole group direct instruction and discussion, 60 minutes of art making and 10 minutes of clean up, weekly. When their posters were complete, participants spent one 45-minute class conducting a gallery-style critique of the class's work. They spent a second 45-minute class period writing artist statements to accompany their posters, citing specific connections to the EL module.

Data Analysis

Throughout the course of this experiment, participants in all three groups continued to study the EL module Stories of Human Rights in their regular education, fifth grade classroom. They completed a total of six assessments, a pre- and post- test for each module. The results of assessment 2 were used as the pre-test, and assessment 4 for the post-test. Participants' assessment scores were recorded on a Microsoft Excel spreadsheet. Mean scores for each group were analyzed using a *t*-test to determine the effectiveness of the different treatments on student achievement.

Results

This study examined arts integration as a means to improve students' academic achievement. The independent variable was art integration that was designed to specifically support an academic unit. There were three separate groups: a control group and two experimental groups, with a total of 52 students. The control group received 45 minutes of art weekly, but no treatment that was aligned with their ELA unit. There were two experimental groups that differed in the amount of weekly art integration they received. Experimental group 1 received 45 minutes of art integration each week, while experimental group 2 received a more intense experimental treatment, with 90 minutes of art integration weekly.

All three groups in this study were assessed with a pre-test and post-test as part of their ELA unit curriculum. These assessments measured students' reading skills, including comprehension (inferential and literal), vocabulary and ability to use supporting evidence in answering questions. The ANOVA for the pre-test scores showed no significant difference between any of the three groups. In contrast, the ANOVA on the post-test data showed a significant effect for group, $F\ (2, 49) = 9.854$, $p = .000$.

The follow-up analyses, with Tukey correction, showed significant differences between the control group and each of the experimental groups. The post-hoc *t*-test between the control group ($M = 80.27$, $SD =$

13.672) and experimental group 1 (M=92.4, SD=9.295) was significant, $t(28) = 3.205$, $p = 0.007$ (see Table 1). In addition, the difference between the control group (M = 80.27, SD = 13.672) and experimental group 2 (M = 95.27, SD = 8.282) was significant, $t(28) = 4.323$, $p < .001$ (see Table 1).

Table 1
Pre- and Post-test Assessment Scores for All Three Groups

Group	*n*	Pre-test *M*	*SD*	Post-test *M*	*SD*
Control group	15	75.00	16.58	80.27	13.67
Experimental group 1	15	79.40	14.50	92.40	9.295
Experimental group 2	22	85.73	9.046	95.27	8.282

Discussion

Improving student achievement in core subject areas is a major concern for teachers nationwide. Those teaching in lower socioeconomic settings or working with students who fall into the so-called achievement gaps because of disparities related to poverty, English language proficiency, disability, and racial and ethnic background have an even larger challenge, as closing these gaps has been a focal point for education policy (National Education Association, 2015). These gaps in student achievement have been growing steadily since the early 1970s (Reardon, 2011) and have a significant economic impact including higher high-school dropout rates, poor college or technical-career training program readiness, and lower college completion rates and employment rates as adults (National Education Association, 2015).

Previous studies have shown positive connections between student achievement in arts learning and core subjects, such as math, reading and science (Burton, et al, 2000, Eisner, 1998, Ruppert, 2006, Winner, E., et al., 2006). This connection is sometimes referred to as transfer, which refers to the theory that cognitive skills and learning in one context (e.g., the arts) can result in cognitive skills and learning in a separate, unrelated subject (Burton, Horowitz & Abeles, 2000). These results of this study support that this transfer connection exists. If the arts can be used as a method to produce student achievement growth, this potential should be developed to further support student learning.

The results of this study indicate that there is a positive effect between students who received the experimental intervention of specific art integration and their achievement on ELA assessments. This researcher hypothesized that a precise and focused art integration program designed to support a specific academic unit would yield a measurable increase in student learning outcomes as measured in that academic unit's assessment. The results of the study confirmed the hypothesis.

The Effect of Art Integration on Student Learning Outcomes

The prediction that students' learning outcomes would be positively affected by art integration was supported in this study. Both experimental groups who received art integration lessons showed statistically significant improvements to their ELA scores on post-test assessments as compared to the control group. These results point back to the theory of transfer: that cognitive skills and learning in one context (e.g., the arts) can result in cognitive skills and learning in a separate, unrelated subject (Burton, Horowitz & Abeles, 2000). Other researchers were able to illustrate similar positive results supporting transfer. Bowen, Greene, and Kisida's study similarly asked students to write an essay after viewing artwork. Both groups were shown an image of an artwork, but only the experimental group visited an art museum. The experimental group performed 11% to 33% higher on their essay (Bowen, Greene, and Kisida, 2014). Neither the students' in the referenced study, nor the students in this researcher's study were evaluated on artwork that they created, but rather on how well

they performed in an academic assessment. In both experiments, the connection to art strengthened students' learning outcomes, supporting the theory of transfer. Possible explanations for these results include the theory that arts learning engages the unconscious emotional learning centers of the brain and can support academic learning (Sylwester, 1998). Perhaps because these students had another avenue in which to connect to the content, they were able to better engage with and retain the material.

This idea is further supported by Bolak, Bialach, & Dunphy (2005) who note that artistic learning and practice can develop and strengthen pathways in the brain. Other prior research supports the importance of making connections for students: when facts such as a visual image, and a date or location are linked together, both the left and right sides of the brain are engaged and learning is enhanced (Simpson, 2007). This effect was achieved when students in art class were connecting specific vocabulary and concepts from their ELA curriculum to imagery that they designed in their art making. Strengthening these connections potentially reinforced the ELA concepts that students were being assessed on in their regular education classrooms.

Interestingly, although there were two experimental groups, with one receiving a more intense level of treatment, both performed at a similar level, indicating that more art integration was not necessarily better. This may suggest that even a modest amount of art integration can have positive benefits for students academically. Eisner, in his 1998 report, noted that the study of transfer in the arts could potentially have an unintended negative impact on art education. His fear was that school leaders might perceive art education as only having value insomuch as it could support "more important" subject matter, ultimately hurting the future of art education in our schools (Eisner, 1998). The results of this study indicate that arts learning need not subjugate its own learning content in order to help students' boost achievement in other academic areas.

Implications

There are several implications that can be drawn from this research. First, art integration can successfully improve student learning outcomes across the curriculum. Student achievement is an area of major concern for teachers nationwide, and any methods that can be utilized to have a positive impact should be considered seriously. Teachers and school administrators should consider that art integration has the potential to increase student engagement and academic performance when well-crafted to support core subjects.

When considering the most vulnerable students, those who fall into achievement gap, art integration can be a particularly powerful tool to improve achievement. Previous research has shown that strong arts programs can play an important role in students' improved attendance and ultimate decisions to remain in school (Ruppert, 2006). Catterall found that arts education had a strong positive impact on at-risk students in terms of a renewed enthusiasm and engagement with school. Further, their dropout rate was 45% lower than students who didn't participate in arts education (Catterall, 1998). However, those same students, including those from low socio-economic situations, African American and Hispanic students, also tend to be the same students who have less access to arts programming (Chappell, 2013). Many schools under pressure to improve scores in reading and math, along with increased importance placed on standardized test results, eliminate arts programs to redirect funding into test preparations (Chappell, 2013). Additionally, regardless of socioeconomic status, the National Endowment for the Arts reported that school-aged students' participation in the arts had steadily declined from 64.6% in 1982 to 49.5% in 2008, nationwide.

If it is our goal to close this achievement gap and improve student learning, regardless of student's backgrounds, schools must consider the potential of art education and art integration as a strategic intervention with potential to help close the achievement gap, and not a superfluous extra that can be easily eliminated.

Limitations and Suggestions for Future Research

There are limitations of this study that must be taken into consideration. First, this experiment was conducted with a limited sample size of 52 students, divided into 3 sections of fifth grade classrooms. Additional research should expand the sample size to include lower and higher grades and repeat the experiment to see if the results hold true with younger and older students. Further expansion of the sample size could also yield insight into whether results were stronger among students of different backgrounds. For example, this study focused on students in a low socioeconomic, urban school setting. Most were of African-American or Hispanic descent. Conducting similar research amongst students who are not traditionally considered to be part of the achievement gap might produce different results.

Additionally, the experiment only attempted to connect art integration with one academic unit. Further research should expand this and examine if the results continue to confirm the hypothesis with different core subjects, including academic units outside of ELA. Multiple data collection points would deepen the understanding of how much impact art integration can have on students' academic achievement, and potentially identify areas of higher benefit, i.e., does art integration have a positive effect on ELA and science achievement, but not math?

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